Adoption of e-Government Services in Pakistan: A Comparative Study Between Online and Offline Users

Rehman, M., Kamal, M. M. & Esichaikul, V.

Original citation & hyperlink:
Rehman, M, Kamal, MM & Esichaikul, V 2016, 'Adoption of e-Government Services in Pakistan: A Comparative Study Between Online and Offline Users' Information Systems Management, vol. 33, no. 3, pp. 248-267.
https://dx.doi.org/10.1080/10580530.2016.1188570

DOI 10.1080/10580530.2016.1188570
ISSN 1058-0530
ESSN 1934-8703

Publisher: Taylor and Francis

This is an Accepted Manuscript of an article published by Taylor & Francis in Information Systems Management on 12/05/16 available online:
http://www.tandfonline.com/10.1080/10580530.2016.1188570

Adoption of e-Government Services in Pakistan: A Comparative Study between Online and Offline Users

ABSTRACT

An empirical study was conducted to investigate the critical factors influencing the citizens' intention to adopt electronic government (e-Government) services at different levels of service maturity i.e. information and transaction level. An integrated conceptual model (ICM) is proposed and validated. Data were collected using quota sampling method from two user groups i.e. online and offline. The empirical evidence, discussion and recommendations provide guidelines to the Pakistani government in order to increase citizens' potential to utilise e-Government services.

Keywords: e-Government, Adoption, Pakistan, Intention to Adopt, e-Government Services, Developing Country.

Paper Type: Research Paper

1. INTRODUCTION

E-Government is a fundamental element in the modernisation of any government which serves as a mean towards enhancing transparency, accountability and good governance; making the government efficient and citizen-centered; enabling citizens to access government services efficiently and effectively (Aggelidis & Chatzoglou, 2009). To address these issues, Government of Pakistan established the electronic government directorate (EGD) in October, 2002. The goal of the EGD is to increase efficiency, effectiveness, transparency, accountability and to deliver services to the citizens efficiently and cost effectively (Electronic Government Directorate, 2005). However, the success of e-Government initiatives is highly dependent on citizens' willingness to adopt these services (Shareef, Kumar, Kumar & Dwivedi, 2011). Previous studies investigated the determinants of e-Government services adoption from the citizens' perspective in the context of developing (e.g. AlAwadhi & Morris, 2008; Bwalya, 2009; Lean, Zailani & Fernando, 2009; Elena, 2009; Lin, Fofanah & Liang, 2011; Weerakkody et al. 2013; Liu et al. 2014) and developed countries (Kumar, Mukerji, Irfan & Ajax, 2007; Shareef et al. 2011).

The developed countries such as Singapore, USA, Denmark, UK, Korea, Japan, Australia and Canada are leading in the world of e-Government (Lin et al. 2011; United Nations e-Government Survey, 2014). The information age holds the challenges for developing countries to bridge the technology adoption gap between developed and developing countries. In the Asian region, 40% of the adult population is illiterate; PC and internet penetration is also low as compared to other regions of the world (UN e-Government Survey, 2010). In the latter context, Pakistan is facing similar challenges of illiteracy, low internet and PC penetration. According to the UN survey, 11% citizens of the whole population are internet users (UN e-Government Survey, 2010). Therefore, low internet usage in the country leads to the low access to e-Government services. In the light of these facts, it is important to identify the determinants of e-Government adoption in Pakistan within the scope of online (frequent) and offline (less frequent) internet users.

After reviewing the existing literature on e-Government adoption from the citizens' perspective (e.g. including among others are Gefen, Pavlou, Rise, Wakertin, 2002; Carter & Belanger, 2004; Carter & Belanger, 2005; Chang, Hung & Yu, 2006; Kumar et al. 2007; Srivastava & Teo, 2008; Kamal & Alsudairi, 2009; Lin et al. 2011; Weerakkody et al. 2013; Liu et al. 2014), it is established that the existing models are quiet narrow in their scope by having focus on partial factors of adoption, they do not have strong theoretical framework and generalisation aspect is heavily ignored in development of these models (Heeks & Bailur, 2007). In addition, only few systematic and thorough studies have been undertaken to comprehensively integrate overall factors related to the adoption of e-Government (Jaeger, 2003; Heeks & Bailur, 2007). Therefore, the need arises to propose a strong theoretical framework. In this regard, an integrated conceptual model is presented to provide a unified picture of the influential factors for the adoption of e-Government services. The citizens' intention to adopt e-Government services is explicitly measured at different levels of service maturity i.e. information and transaction level.

The development stages of e-Government service maturity have been adapted from the existing studies (e.g. Layne & Lee, 2001; Fang, 2002; Reddick, 2004; Evans & Yen, 2005; Andersen & Henriksen, 2006; Klievink & Janssen, 2009). These two levels of service maturity have significant differences in terms of their functionality. To get information, citizens can view, collect or download information from the state government website which is called one-way communication. The second stage involves interaction between the citizens and e-Government services provided by the state government website referred to as two-way communication. These two levels of service maturity have been selected because of their rapid development in most of the developing countries. Nevertheless, the levels of horizontal and vertical integration have not been achieved by most of the developing countries like Pakistan. Like other developing countries, Pakistan is also facing a lot of challenges while implementing e-Government in the country (Kamal, Hackney & Sarwar, 2013). Pakistan was declared as a country with deficient e-Government capacity holding e-Government development index value below 1.0; i.e., 0.2823. However, Pakistan was ranked at 7^{th} number out of 9 countries of the region.

The paper is organised as follows: introduction, theoretical background, theoretical model, methodology, empirical analysis and conclusion. Section I gives an overview of e-government in general and specifically within the context of Pakistani society. Section II gives an overview of the studies reviewed in literature focusing on identifying factors related to e-Government adoption. Section III proposes an integrated conceptual model based on extensive review of literature and expert reviews. Section IV provides details about research methodology which is followed by details of expert reviews, development of survey instrument and sampling plan. Section V discusses the results in detail. Section VI provides conclusion and gives recommendations to the policy makers and practitioners. The introduction section leads to three research inquiries such as:

- To identify the critical factors (variables) influencing the adoption of e-Government services at different levels of service maturity i.e. information and transaction level.
- To come up with ICM highlighting a comprehensive set of potential factors influencing the citizens' intention to adopt e-Government services and to customise the model (ICM) according to the local context of Pakistani society.
- To compare the adoption perspectives of offline and online users; to analyse whether they are significantly different from one another or not.

The study provides an in-depth understanding about the current state of e-Government in Pakistan. In addition, the results can be generalised to other developing countries having similar circumstances especially in the context of developing countries.

2. THEORETICAL BACKGROUND

The technology acceptance model (TAM) has been used widely to predict citizens' intention to adopt new technology (Davis, 1989). According to TAM, the primary drivers for technology adoption are perceived usefulness and perceived ease of use. Perceived usefulness and perceived ease of use influence one's attitude towards system usage, which influences one's behavioral intention to use a system. Similarly, diffusion of innovation (DOI) model has also highlighted the determinants of adoption (Rogers, 2003). These determinants consist of compatibility, complexity and relative advantages of new technology. The DOI model argues that individuals adopt new technology when they think that the new technology is compatible with their beliefs and values, less complex to learn and also provides benefits after adopting it. Relative advantage conceptually maps to perceived usefulness and complexity conceptually maps to perceived ease of use construct of TAM. In addition to this, DeLone & McLean proposed an updated IS Success Model. According to this model, information system can be evaluated in terms of information quality, service quality and system quality; these characteristics affect the intention to use and user satisfaction (DeLone & McLean, 2003). The constructs of service quality and information quality are adapted from updated D&M IS success model. The construct of service quality is a measure of assurance, empathy and responsiveness of IS success services while information quality measures semantic success (DeLone & McLean, 2003). Therefore, both of these constructs have been incorporated into the proposed integrated conceptual model.

Several scholars have applied TAM and DOI models to examine the role of perceived usefulness, perceived ease of use, relative advantage, compatibility and facilitating conditions (e.g. Carter & Belanger, 2004; Carter & Belanger, 2005; Phang, Sutanto, Li & Kankanhalli, 2005; Chang et al. 2006; Dimitrova & Chen, 2006; Kumar et al. 2007; Shareef, Kumar, Kumar & Hasin, 2009; Bwalya, 2009; Elena, 2009; Irani, Dwivedi & Williams, 2010; Shareef et al. 2011; Lin et al. 2011; Lee, Kim & Ahn, 2011; Weerakkody et al. 2013; Liu et al. 2014) as influential adoption factors. In addition, few researchers have investigated the role of gender, age, education and internet usage experience (e.g. Choudrie & Dwivedi, 2005; Akman, Yazici, Mishra & Arifoglu, 2005; Bwalya, 2009; Elena, 2009) in the adoption of e-Government services. Some of the scholars have theorised on perceived risk (e.g. Miyazaki & Fernandez, 2001; Warkentin, Gefen, Pavlou & Rose, 2002; Bwalya, 2009), ICT Infrastructure (e.g. Ibrahim & Irani, 2005; Bwalya, 2009), Service Quality (e.g. Tassabehji & Elliman, 2006; Kumar et al. 2007, Lee et al. 2011; Shareef et al. 2011; Alawneh et al. 2013) and Trust (e.g. Mofleh & Wanous, 2008; Al-Sobhi, Weerakkody & Kamal, 2009; Elena, 2009; Al-Busaidy & Weerakkody, 2009; Alawneh et al. 2013) in their studies. In the light of the existing literature, it is established that most of the studies focus on partial factors of adoption. Therefore, the need arises to propose a conceptual model which integrates the overall factors related to the adoption of e-Government services.

In addition to this, few studies compare online and offline groups in the context of ICT, e-Commerce and social networks (Lee, Hahn & Kim, 2009; Lu, Cao, Wang & Yang, 2011). However, there is little research in the context of e-Government. This research study fills this

gap in the literature. In the recent studies, internet is reflected as a valuable tool (Mesch & Talmud, 2006; Lu et al. 2011). For instance, Akman et al. (2005) in their research on e-Government proposed a model focusing on the factors that affect users' behavioral intention to transfer usage from offline to online channel. The study reveals that internet experience moderates the relationship between relative benefit and consumers' intention to transfer usage. According to the findings, highly educated users are more aware about internet usage (Akman et al. 2005). In addition, they also provide an understanding on the benefits associated with the usage of online services i.e. lower cost, convenience, time saving and no location constraint (Wu & Wang, 2005; Hahn & Kim, 2009). They are also well aware about the security measures taken by the service providers to reduce risks associated with the use of online services. However, non-users lack in awareness and usage of internet. Therefore, perceived risk has a significant negative effect on the intention to conduct transaction (Pavlou, 2003; Kim, Ferrin & Rao, 2008; Lee, 2009). Non-users are highly concerned about security issues while performing transaction with the government website. As a result, users who understand the relative benefit of online services are more inclined towards their usage. The findings also suggest that users with more internet experience are more inclined towards performing online transactions (Akman et al. 2005; Lu et al. 2011).

Prensky (2001) made a claim over a division between young born into 'digital era' and those born earlier. Young are different from old in terms of their technological abilities, communication skills and the way they are socialised (Tapscott & Agnew, 1999). Similarly, online sample group will be having good technological abilities and communication skills as compared to offline sample group. In this study, the distinguishing variable between online and offline sample group is internet usage frequency. Online respondents are mostly highly educated citizens as compared to offline respondents. In addition, Online ICT users are frequent internet users who have more frequent access to resources while Offline ICT users are non-frequent internet users which are deprived of access to resources but their perception is playing a vital role in the adoption of e-Government services. Moreover, it is important to study offline users to avoid biasness element in the generalisation of the results. According to the online sample statistics, 16.7% of respondents use internet several times monthly, 21.3% use once in a day while 62.0% use internet several times daily. In the offline sample group, 65.3% of respondents use internet rarely and 34.7% use internet once in a month. The variable of internet usage frequency was a verification check to ensure that citizens are reliably classified in their respective sample group i.e. online or offline.

3. THEORETICAL MODEL

The study proposes a conceptual model which integrates the related factors (variables) of adoption i.e. trust, security, quality of service, website design and e-Readiness; and determines the citizens' intention to adopt e-Government services at different levels of service maturity i.e. information and transaction level. Figure 1 illustrates the proposed conceptual model.

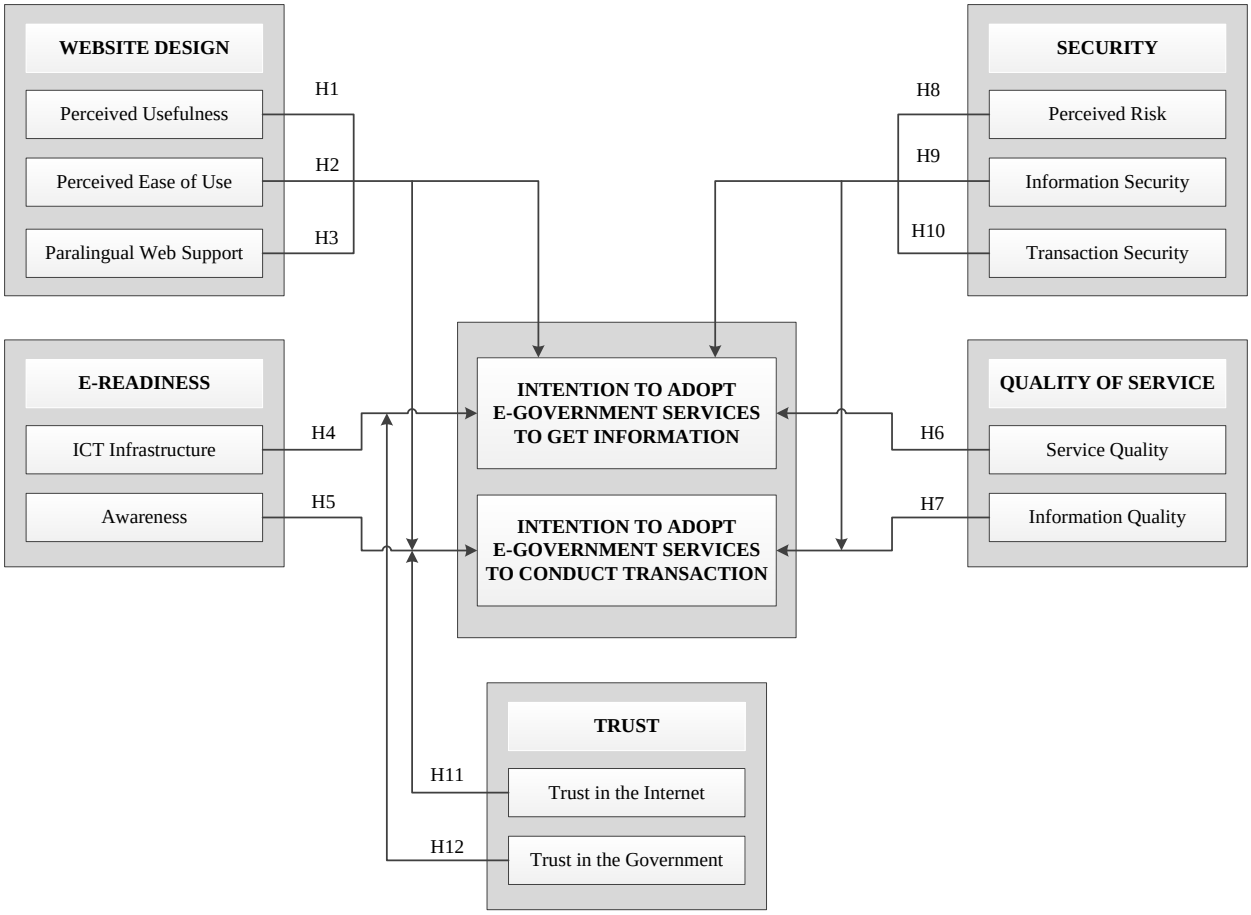

Figure 1: Proposed Conceptual Model
Source: Adapted from (Rehman and Esichaikul, 2011; Rehman et al. 2012)

A number of factors influencing the citizens' adoption of e-Government services have been identified. In most of the studies, diversified variables have been included without any proper categorisation and also few studies are narrow in their scope by concentrating on limited factors / variables of adoption. Therefore, the need arises to propose an integrated conceptual model, which may present a complete picture of the influential factors for the adoption of e-Government services by the citizens.

3.1 Justification for Model Variables

Initially, integrated conceptual model was developed and proposed based on associated previous researches. This integrated conceptual model aims to present a complete picture of influential factors for the adoption of e-Government services. The integrated conceptual model covering the aspects of website design including the variables of *perceived usefulness, perceived ease of use and paralingual web support*; e-Readiness including the variable of *ICT infrastructure*; quality of service including the variables of *service quality and information quality*; security including the variables of *perceived risk, information security and transaction security* was proposed.

These variables were adapted from the existing literature which provides the literature support for the selection of model variables.
After proposing integrated conceptual model, expert reviews were conducted to make the model specific to the Pakistani context. The objective of expert reviews was to confirm the factors and their respective variables within the context of Pakistani society. The expert reviews were conducted with the government officials, software engineers and academic researchers of Pakistan. A total of six expert reviews were conducted with equal participation from each specified group. As an outcome of expert reviews, three variables were incorporated into the revised integrated conceptual model. The variables were *trust in the Internet, trust in the government and awareness* about available e-Government services. The findings of expert reviews were found to be consistent with the result of the research studies conducted by (Mofleh and Wanous, 2008; Shareef et al. 2011; Alomari et al. 2012; Alawneh et al. 2013).

Finally, integrated conceptual model proposed in this study rectifies the shortcomings of the previous models by adding new factors and their respective variables to make the model more comprehensive. Some of the variables used in this study were culled from studies on e-Government adoption, and few of them were incorporated into the integrated conceptual model by the researcher. In the revised integrated conceptual model, website design including *perceived usefulness, perceived ease of use, paralingual web support*; quality of service including the variables of *service quality and information quality*, e-Readiness including the variables of *ICT infrastructure and awareness*, security including the variables of *perceived risk, information security and transaction security*; and trust including the variables of *trust in the internet and trust in the government* were considered to have influence over the citizens' intention in adopting e-Government services. The integrated conceptual model is proposed to measure the intention of the citizens at two different levels of service maturity; i.e., information and transaction levels.

Overall, the research questions proposed for this study are based on the existing literature review. However, there are few exceptions which make this model unique by introducing the variables of paralingual web support, awareness, information security, transaction security and information quality. In addition, the variables of paralingual web support and awareness have been used by researchers (Shareef et al. 2011, Mofleh and Wanous, 2008) respectively before proposing model by Rehman and Esichaikul (2010). However, the variables of paralingual web support, information security, transaction security and information quality have been introduced by the researcher which can be marked as contribution in the adoption framework.

While keeping the track of contributions, the factor of website design including the variable of paralingual web support, quality of service including the variable of information quality, e-Readiness including the variable of awareness, security including the variables of information security and transaction security are added by the researcher. The integrated conceptual model was proposed on the basis of TAM, DOI and DeLone and McLean IS success model. The variables of perceived usefulness and perceived ease of use are adopted from TAM and incorporated into the integrated conceptual model. The diffusion of innovation model is explained by five characteristics that are "relative advantage, compatibility, complexity, triability and observability". These characteristics are used to define the adoption process (Rogers, 2003). Two characteristics of this model are integrated into the integrated conceptual model; i.e., relative advantage and complexity. Relative advantage conceptually maps to perceived usefulness and perceived ease of use construct of TAM; and complexity conceptually maps to

perceived ease of use. The variables of service quality and information quality are adapted from the updated D&M IS success model and incorporated into the integrated conceptual model.

3.1.1 Website Design

A website is a key component for online marketing strategy. It means that special care should be taken in designing of a government website and also to make it efficient and effective for the citizen's needs. The effectiveness of a website can be measured in terms of perceived usefulness and perceived ease of use. Davis (1989) has defined perceived usefulness, as 'the degree to which a person believes that using a particular system would enhance job performance'. The level of perceived usefulness directly affects e-Government adoption (Venkatesh & Davis, 2000). Davis (1989) has defined perceived ease of use as 'the degree to which a person believes that using a particular system would be free of effort'. Perceived usefulness and Perceived ease of use are primary constructs of Technology Acceptance Model (TAM). Venkatesh and Davis (2000) also found a positive relationship between perceived ease of use and system adoption. In addition to this, the variable of paralingual web support was added by the researcher. It is supposed that multiple language support on the government website can increase the adoption of e-Government services (Segovia & Jennex, 2009).

H1: *Perceived usefulness will have a positive influence on citizens' intention to adopt e-Government services.*

H2: *Perceived ease of use will have a positive influence on citizens' intention to adopt e-Government services.*

H3: *Paralingual web support will have a positive influence on citizens' intention to adopt e-Government services.*

3.1.2 E-Readiness

E-Readiness is defined as 'the aptitude of an economy to use ICT to migrate traditional businesses into the new economy' (Bui, Sankaran & Sebastian, 2003). The government should create an enabling environment for the adoption of ICT in everyday lives of citizens (Ibrahim & Irani, 2005; Bwalya, 2009) which is pre-condition for the adoption of e-Government services. The government should provide ICT Hubs / Internet cafes to the citizens so that they can access e-Government services whenever they want. These ICT hubs / Internet cafes are beneficial for developing countries where PC and internet penetration rate is very low. The citizens' knowledge about available e-Government services is also one of the major concerns for the adoption of e-Government services. In addition, it was also found that awareness had a great impact on the citizens' intention to adopt e-Government services (Mofleh & Wanous, 2008).

H4: *ICT infrastructure will have a positive influence on citizens' intention to adopt e-Government services.*

H5: *Awareness will have a positive influence on citizens' intention to adopt e-Government services.*

3.1.3 Quality of Service

Quality of service generally plays a vital role in the adoption of e-Government services (Reichheld & Schefter, 2000; Alawneh et al. 2013). In this research, quality of service is measured in terms of service quality and information quality. There is a scale called SERVQUAL to measure the service quality (Parasuraman, Zeitham & Berry, 1988). The dimensions of the scale are tangibles, reliability, responsiveness, assurance, and empathy. Three

of these dimensions have been adapted to measure service quality i.e. reliability, assurance and responsiveness. These measures have been selected because they are associated with the provision of IS services to the citizens. The information quality is measured by the quality of contents provided on the government website. In addition, these contents are being measured by precise, accurate and up-to-date information available on the government website.

H6: *Service Quality has a significant positive affect on citizens' intention to adopt e-Government services.*

H7: *Information Quality has a significant positive affect on citizens' intention to adopt e-Government services.*

3.1.4 Security

E-Government adoption depends on citizens' perception about available e-Government services that how securely they can transact online and whether their personal information is kept secure or not. One of the major deterrents of using online services is the lack of control over the information that how information will be stored, who will use it and for what purpose it will be used for. When the citizens' feel more control over the flow of information they feel secure which ultimately increase their adoption of online services. In few studies, perceived risk was found to be significant concern of security which discourages the use of online services (Warkentin et al. 2002; Bwalya, 2009). Perceived risk is further divided into two concerns i.e. privacy and system security (Miyazaki & Fernandez, 2001). In the proposed conceptual model, the researcher had introduced variables of information security and transaction security to measure the citizens' perception about these concerns (Rehman & Esichaikul, 2011; Rehman et al. 2012).

H8: *Perceived risk will negatively influence citizens' intention to adopt e-Government services.*

H9: *Concerns about information security will negatively influence citizens' intention to adopt e-Government services.*

H10: *Concerns about transaction security will negatively influence citizens' intention to adopt e-Government services.*

3.1.5 Trust

The study argues that e-Government services adoption depends on the citizens' trust on the government as well as on the internet. These variables are highly influential especially in the context of developing countries. Trust in internet is defined as 'the trust level that citizens' have on internet and its related applications'. Trust in the government is defined as 'the trust level that citizens' have on the government'. Trust is an important aspect of e-Government (Warkentin et al. 2002). Trust issues are categorised into trust in the internet and trust in the government. Trust in the internet is measured in terms of system security and privacy of personal information. The citizens must have confidence in government as well as on the enabling technologies (Belanger & Carter, 2008). In addition, positive experience with the internet technologies may enhance citizens' trust towards e-services which are provided by the government. The citizens' having great internet usage experience may also have a strong belief about secure and reliable transactions over the internet (Venkatesh, Morris & Davis, 2003).

H11: *Trust in the internet has a significant positive impact on citizens' intention to adopt e-Government services.*

H12: *Trust in the government has a significant positive impact on citizens' intention to adopt e-Government services.*

4. METHODOLOGY

4.1 Expert Reviews

The objective of the expert reviews was to validate the proposed integrated conceptual model and customise it according to the context of Pakistan. A total of six (6) interviews were conducted with the government officials, software engineers and academic researchers of Pakistan. The professionals were selected in equal number from each category i.e. government officials, software engineers and academic researchers. As a result of a series of interviews, three variables i.e. awareness, trust in the internet and trust in the government were found as a matter of attention within the context of Pakistani society. Pakistan is a developing country facing challenges in devising rules and regulations for cyber security. However, Pakistani citizens are more concerned about security of their transactions and privacy of their personal information while transacting with the government website. In addition, citizens do not rely on enabling technologies to interact with the government. Therefore, citizens have less trust on the enabling technologies i.e. internet. In addition, the government of Pakistan also lacks in collaboration between its departments (Electronic Government Directorate, 2005) which may cause hindrance in delivering e-Government services to the citizens efficiently and effectively. Therefore, the Pakistani citizens may be suspicious about the government's capabilities to implement e-Government systems. However, previous studies (Carter & Belanger, 2005; Welch & Panday, 2005; Belanger & Carter, 2008) have identified the significant role of trust in internet and trust in e-Government as influential factors of adoption.

In addition, according to the ICT development index (IDI), Pakistan was ranked at 123rd position out of 152 countries of the world. IDI is a composite measure of ICT readiness, ICT capacity (skills) and ICT use which ultimately have impact on the society (ITU, 2011). Pakistan's low IDI index is an indication of non-availability of ICT infrastructure, lack of citizens' skills and usage of available e-Government services. Therefore, there is also need to boost awareness among the citizens to utilise available e-Government services.

4.2 Development of Survey Instrument

Based on the vast literature review and expert reviews, an initial version of a survey questionnaire was developed. A web-based survey application was designed to collect the responses from online respondents. Similarly, paper-based survey was designed to collect responses from the offline respondents.

4.2.1 Pre-Testing

The questionnaire was refined with extensive pre-testing. The target respondents for pre-testing were citizens having significant experience in the domain of e-Government. The results of pre-testing revealed that the questionnaire items were comprehensive.

4.2.2 Pilot Testing

The objective of pilot testing was to validate and refine the survey instrument items with a convenience sample of 138 citizens. The target respondents for pilot testing were online citizens of Pakistan. The reliability and factor analysis were performed to measure the internal consistency and construct validity respectively. The reliability analysis shows the promising results. In addition, the results of factor analysis also ensure the construct validity of survey instrument items. The survey instrument items were refined to avoid misunderstanding due to the wrong usage of words.

4.3 Sampling

For online survey, respondents were accessed through email lists, community groups' websites and personal contacts by keeping in consideration equal participation from each sub group; i.e., government officials, academic personnel, business personnel and IT Professionals / Non-IT Professionals of Pakistan. For offline survey, respondents were accessed by face to face visits to universities, offices, organisations and markets by keeping in view the defined groups for each sub group to collect data. The selection criterion for participation in the survey was general awareness about e-Government. In order to make sure that the sample represented the whole population, data were collected in equal proportion from both groups. The study classified the respondents on the basis of their internet usage frequency. Online respondents had frequent access to the internet. However, offline respondents had less frequent access to the internet. The reason for having mix research methodology was to include perception of citizens from both sample groups i.e. online and offline. These both sample groups cannot be ignored as their perception is playing a vital role in the adoption of e-Government services in Pakistan. By ignoring the perception of these sample groups, the results produced may be misleading or cannot be generalised. Therefore, authors have adopted mix research methodology.

The objective was to eliminate response biasness, and to have good mix of citizens' perception by dividing the population into various sub groups; i.e., government officers, academic personnel, business personnel and IT Professional / Non-IT Professionals. Consequently, the results produced from the study can be generalised to the whole population. For the sake of full study, the survey was administered to four hundred (400) online and offline citizens' of Pakistan. Of the 400 questionnaires distributed, 300 responses were collected within the specified duration starting from May, 2011 to September, 2011 yielding a response rate of 75% by employing quota sampling method. In order to maintain quotas, the citizens were classified into various sub groups i.e. IT and non-IT professionals, academia personnel, government officers and business personnel belonging from both categories i.e. online and offline. To collect data from online respondents, two hundred (200) emails were sent to the citizens along with the web link of survey application according to the sampling plan. After 2 weeks of first email, a reminder email was sent to the respondents who did not fill out the questionnaire. To collect responses from offline respondents, two hundred (200) questionnaires were distributed within the specified sub-groups by means of face to face communication.

4.3.1 Reliability Analysis

Cronbach's alpha was used to test the internal consistency of the survey instrument items. There are four cut-off points to measure reliability i.e. excellent reliability (0.90 and above), high reliability (0.70 – 0.90), moderate reliability (0.50 – 0.70) and low reliability < 0.50 (Hinton, Brownlow, McMurry & Cozens, 1980). The results of reliability analysis are shown in Table 1.

Constructs / Variables	Number of Survey Instrument Items	Cronbach's Alpha
Website Design	9	.930
e-Readiness	5	.864
Quality of Service	6	.899
Security	7	.889
Trust	5	.882

Table 1: Reliability Analysis using Cronbach's Alpha

Cronbach's alpha test revealed that all constructs had great internal consistency (Table 1).

4.3.2 Construct Validity

Construct validity was evaluated by using factor analysis. This data reduction technique was used to reduce a large number of variables to smaller set of variables and to group variables into their respective factors. The Bartlett test of sphericity was found to be significant at $p < .000$ and Kaiser-Meyer-Olkin (KMO) test for sampling adequacy was also found to be significant with a value of 0.959. The recommended value for KMO is greater than 0.5 (Kline, 1999). As a result of factor analysis, some of the survey instrument items were excluded from the further analysis due to low factor loadings as shown in Table 2.

Survey Instrument Items	Factor Loadings				
	Website Design	E-Readiness	Security	Trust	Quality of Service
PU_1	.698	–	–	–	–
PU_2	.695	–	–	–	–
PU_3	.705	–	–	–	–
PU_4	.725	–	–	–	–
PEOU_1	.708	–	–	–	–
PEOU_2	.719	–	–	–	–
PEOU_3	.678	–	–	–	–
PEOU_4	.690	–	–	–	–
PW_1	.520	–	–	–	–
IN_1	–	.617	–	–	–
IN_2	–	.511	–	–	–
IN_3	–	–	–	–	–
AW_1	–	.572	–	–	–
AW_2	–	.778	–	–	–
AW_3	–	.799	–	–	–
PR_1	–	–	.701	–	–
PR_2	–	–	–	–	–
PR_3	–	–	.776	–	–
IS_1	–	–	.707	–	–
IS_2	–	–	.576	–	–

IS_3	–	–	.667	–	–
TS_1	–	–	.510	–	–
TS_2	–	–	.553	–	–
TI_1	–	–	–	.585	–
TI_2	–	–	–	.739	–
TI_3	–	–	–	.503	–
TG_1	–	–	–	.629	–
TG_2	–	–	–	.700	–
TG_3	–	–	–	.724	–
SQ_1	–	–	–	–	.632
SQ_2	–	–	–	–	.629
SQ_3	–	–	–	–	.784
IQ_1	–	–	–	–	.782
IQ_2	–	–	–	–	.815
IQ_3	–	–	–	–	.732

Table 2: Principal Component Analysis (PCA) with Varimax Rotation Method

Note: PU = Perceived Usefulness; PEOU = Perceived Ease of Use; PW = Paralingual Web Support; IN = ICT Infrastructure; AW = Awareness; PR = Perceived Risk; IS = Information Security; TS = Transaction Security; TI = Trust in the Internet; TG = Trust in the Government; SQ = Service Quality; IQ = Information Quality.

5. EMPIRICAL RESULTS

5.1 Descriptive Analysis

The descriptive statistics of the respondents are shown in Table 3. According to the questionnaire results, 50% of the respondents were male and 50% were female. The proportion of gender was maintained according to the gender ratio of whole population in Pakistan. The most dominating age group was 20 to 40 years old. The age segment of less than 20 years contributed least in sample size i.e. 4.6% of the overall responses. The respondents were from various educational backgrounds: 11.3% hold Matric level of education, 22% were having intermediate level of education, 34% of respondents holding graduation degree while 26.7% were having post-graduate education level. The least responsive educational category was Middle level of education with the response rate of 6%. The group with the lowest internet usage experience was represented by 35.7% while the group with the maximum internet usage experience was represented with 11.6% of the overall responses. Out of 300 respondents, 130 (43.3%) were aware about Pakistan e-Government web portal while 170 (56.7%) were not even aware about Pakistan e-Government web portal. General awareness about e-Government was a pre-condition for the users to respond for this survey.

Demographics	**Online**		**Offline**		**Overall**	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Gender						
Male	76	50.7	74	49.3	150	50
Female	74	49.3	76	50.7	150	50
Age Groups						
Less than 20 Years	6	4.0	8	5.3	14	4.6
20 – 30	57	38.0	57	38.0	114	38.0

31 – 40	59	39.3	45	30.0	104	34.7
41 – 50	15	10.0	26	17.3	41	13.7
Above 50	13	8.7	14	9.3	27	9.0
Education						
Middle	0	0.0	18	12.0	18	6.0
Matric	7	4.7	27	18.0	34	11.3
Intermediate	15	10.0	51	34.0	66	22.0
Graduate	57	38.0	44	29.3	102	34.0
Post Graduate	70	47.3	10	6.7	80	26.7
Internet Usage Experience						
Less than 1 Year	10	6.7	97	64.7	107	35.7
1 – 3 Years	24	16.0	42	28.0	66	22
4 – 6 Years	43	28.7	11	7.3	54	18
7 – 9 Years	38	25.3	0	0.0	38	12.7
More than 9 Years	35	23.3	0	0.0	35	11.6
Pakistan E-Government Portal Awareness						
Yes	77	51.3	53	35.3	130	43.3
No	73	48.7	97	64.7	170	56.7

Table 3: Demographic Profile of Respondents

5.2 Difference between Online and Offline Users

The independent samples *t*-test revealed that there were significant differences between online (n = 150) and offline (n = 150) users in terms of their perception towards intention to adopt e-Government services.

Variables	Online Users (n = 150)		Offline Users (n = 150)		t-value	Level of Significance
	Mean	SD	Mean	SD		
Perceived Usefulness	3.74	.48	2.24	.59	23.75	.000
Perceived Ease of Use	3.84	.47	2.17	.53	28.62	.000
Paralingual Web Support	3.91	1.00	3.09	.77	7.88	.000
ICT Infrastructure	3.68	.52	2.15	.77	20.00	.000
Awareness	3.43	.72	2.29	.72	12.85	.000
Perceived Risk	3.01	.69	2.22	.79	9.23	.000
Information Security	2.88	.89	1.93	.71	10.19	.000
Transaction Security	3.20	.68	1.90	.61	17.25	.000
Service Quality	3.53	.67	2.32	.77	14.38	.000
Information Quality	3.37	.64	2.49	.92	9.55	.000
Trust in the Internet	3.06	.71	2.19	.83	10.08	.000
Trust in the Government	3.10	.61	2.12	.75	12.29	.000

Table 4: Differences between Online and Offline User Groups

The variables along with their mean, standard deviation, t-value and level of significance are shown in Table 4 for both groups i.e. online and offline. The result shows that the mean values of variables differ significantly between online and offline user groups. The mean values of online group are significantly high as compared to offline group which shows their positive perception

towards the adoption of e-Government services. However, the perception of offline users is considered as disinclined towards the adoption of e-Government services.

5.3 Evaluation of Measurement Model

The measurement model is assessed through Confirmatory Factor Analysis (CFA) in AMOS 20. The CFA is used to measure the latent variables which cannot be measured directly. The procedure of Maximum Likelihood Estimation (MLE) is adopted for Structural Equation Modeling (SEM) analysis. In addition, Multi group analysis has been used in order to perform analysis of both groups i.e. online and offline. Table 5 and Table 6 show the results of SEM analysis for online user group in order to get information and to conduct transaction with the government website respectively. Table 7 and Table 8 show the results of SEM analysis for offline user groups in order to get information and to conduction transaction with the government website respectively. The variable of paralingual web support was excluded from Confirmatory Factor Analysis (CFA) due to low loadings.

Variables	Estimates	Significance *(to get Information)*
Perceived Usefulness	.591	**.002**
Perceived Ease of Use	.025	.870
ICT Infrastructure	-.400	.150
Awareness	.358	**.002**
Service Quality	.468	**.000**
Information Quality	-.085	.357
Perceived Risk	.127	.262
Information Security	.161	**.021**
Transaction Security	.525	**.047**
Trust in the Internet	.246	**.068**
Trust in the Government	-.056	.664

Table 5: SEM Analysis – Coefficients of Online Users to get Information

Table 5 shows the results of hypotheses testing for online users in order to get information from the government website. From the statistical analysis, it is concluded that perceived usefulness, awareness, service quality, information security, transaction security and trust in the internet were found to be significant variables. The value of estimates which is regarded as beta (β) indicates that perceived usefulness had the largest impact on the citizens' intention to adopt e-Government services to get information from the government website followed by transaction security, service quality, awareness, trust in the internet and information security as shown in Table 5.

Variables	Estimates	Significance *(to conduct transaction)*
Perceived Usefulness	.132	.483
Perceived Ease of Use	.505	**.006**
ICT Infrastructure	.037	.854
Awareness	.036	.690
Service Quality	.576	**.000**

Information Quality	.385	**.020**
Perceived Risk	-.086	.495
Information Security	-.080	.221
Transaction Security	.408	**.077**
Trust in the Internet	.521	**.000**
Trust in the Government	-.170	.170

Table 6: SEM Analysis – Coefficients of Online Users to conduct transaction

Table 6 shows the results of hypotheses testing for online users in order to conduct transaction with the government website. From the statistical analysis, it is concluded that perceived ease of use, service quality, information quality, transaction security and trust in the internet were found to be significant variables. The value of estimates indicates that service quality had the largest impact on the citizens' intention to adopt e-Government services to conduct transaction with the government website followed by trust in the internet, perceived ease of use, transaction security and information quality as shown in Table 6.

Variables	**Estimates**	**Significance** *(to get Information)*
Perceived Usefulness	-.134	.195
Perceived Ease of Use	.429	**.003**
ICT Infrastructure	.341	**.000**
Awareness	.353	**.000**
Service Quality	.196	**.036**
Information Quality	-.091	.161
Perceived Risk	.323	**.000**
Information Security	.364	**.000**
Transaction Security	-.260	.144
Trust in the Internet	-.089	.275
Trust in the Government	.449	**.000**

Table 7: SEM Analysis – Coefficients of Offline Users to get Information

Table 7 shows the results of hypotheses testing for offline users in order to get information from the government website. From the statistical analysis, it is concluded that perceived ease of use, ICT infrastructure, awareness, service quality, perceived risk, information security, and trust in the government were found to be significant variables. The value of estimates indicates that trust in the government had the largest impact on the citizens' intention to adopt e-Government services to get information from the government website followed by perceived ease of use, information security, awareness, ICT infrastructure, perceived risk and service quality as shown in Table 7.

Variables	**Estimates**	**Significance** *(to conduct transaction)*
Perceived Usefulness	.109	.212
Perceived Ease of Use	.264	**.016**
ICT Infrastructure	.350	**.003**

Awareness	.101	.263
Service Quality	-.127	.113
Information Quality	-.049	.434
Perceived Risk	.119	**.081**
Information Security	.241	**.001**
Transaction Security	.437	**.000**
Trust in the Internet	.317	**.000**
Trust in the Government	.119	**.037**

Table 8: SEM Analysis – Coefficients of Offline Users to conduct transaction

Table 8 shows the results of hypotheses testing for offline users in order to conduct transaction with the government website. From the statistical analysis, it is concluded that perceived ease of use, ICT infrastructure, perceived risk, information security, transaction security, trust in the internet and trust in the government were found to be significant variables. The value of estimates indicates that transaction security had the largest impact on the citizens' intention to adopt e-Government services to conduct transaction with the government website followed by ICT infrastructure, trust in the internet, perceived ease of use, information security, perceived risk and trust in the government as shown in Table 8.

5.4 Summary of Hypotheses Testing

The hypothesis testing was performed for both sample groups i.e. online and offline. The detailed results of hypotheses testing are shown in Table 9. The dashes ("-") shows that hypotheses were not found to be significant at all. INT is the dependent variable which is measuring citizens' intention to adopt e-Government services either to get information (INF) and to conduct transaction (TRN) with the government website.

Hypotheses	**Relationships**	**Results of online users**		**Results of offline users**	
		Information (INF)	**Transaction (TRN)**	**Information (INF)**	**Transaction (TRN)**
H1	PU -> INT	Supported	-	-	-
H2	PEOU -> INT	-	Supported	Supported	Supported
H3	Excluded from SEM analysis due to low loadings of items				
H4	ICT -> INT	-	-	Supported	Supported
H5	AW -> INT	Supported	-	Supported	-
H6	SQ -> INT	Supported	Supported	Supported	-
H7	IQ -> INT	-	Supported	-	-
H8	PR -> INT	-	-	Supported	Supported
H9	IS -> INT	Supported	-	Supported	Supported
H10	TS -> INT	Supported	Supported	-	Supported
H11	TI -> INT	Supported	Supported	-	Supported
H12	TG -> INT	-	-	Supported	Supported

Table 9: Hypotheses Testing Results for Online and Offline Users

6. DISCUSSION

This section discusses the results of hypotheses testing for both groups i.e. online and offline sample groups in order to get information (INF) and to conduct transaction (TRN) with the government website. As per the research objectives, the results are presented at two different levels of service maturity; i.e., information and transaction level. In addition, another objective of the study is to explore differences in the adoption perspectives of online and offline users at two different levels of service maturity; i.e., information and transaction level. In case of online users, perceived usefulness strongly influences the citizens' intention to adopt e-Government services to get information from the government website. Online users understand the relative benefits associated with the use of e-Government services. According to the perception of online users, perceived ease of use considerably influences citizens' intention to adopt e-Government services in order to conduct transaction with the government website. Online users are mostly educated users; therefore, they understand the ease associated with the usage of e-Government services to perform any transaction with the government website. In case of offline users, perceived ease of use knowingly affects citizens' intention to adopt e-Government services in order to get information (INF) and to conduct transaction (TRN) with the government website. The offline users think that their interaction with the government should be easier as compared to traditional way of dealing with the government.

- In case of online users, service quality positively influences citizens' intention to adopt e-Government services. Online users expect that quality of services should be provided by the government websites. The online group perceives that services provided to the citizens should be reliable, available 24 hours a day and also, able to respond to the citizens needs quickly. On the other hand, offline users are found to be unaware about the issues of quality of services especially in the context of performing transaction with the government website. Thus, the variable of service quality is not found to be a significant variable influencing the citizens' intention to adopt e-Government services in order to conduct transaction with the government website. In case of online users, awareness is found to be a major variable influencing the citizens' intention to adopt e-Government services in order to get information from the government website. Higher awareness about available e-Government services leads to high intention of the citizens to adopt e-Government services. On the other hand, offline users are not found to be aware about available e-Government services. Additionally, information security is also found to be noteworthy in order to get information from the government website by online and offline users as well as to conduct transaction with the government website by offline users. The citizens perceive that their personal information may be used in an unintended way by the government agency. Therefore, they are reluctant to communicate with the government website.

- In case of offline users, transaction security is found to be important in order to conduct transaction with the government website. The users' concerns are highly engaged in conducting secure transaction with the government website. In Pakistan, citizens are concerned with the security of their personal and financial information. Citizens perceive that hackers may be able to intrude their financial information; i.e., credit card details. Additionally, they have potential risk of being exposed to another party who may access

their personal and financial information without their consent. Offline users are highly uncertain about risks associated with performing any transaction with the government website in order to get information or to conduct transaction.

According to the Pakistani context, trust on the enabling technologies i.e., internet is also one of the most important variables influencing the citizens' intention to adopt e-Government services. In case of online users, citizens perceive that internet is a robust and safe environment to transact with e-Government services. According to the detailed analysis, trust in the internet is found to be noteworthy among frequent internet users because they have high internet usage experience with more frequent access to the internet. In addition to this, it was also found to be significant in order to conduct transaction with the government website by offline users. Lastly, trust in the government is also found to be of major concern in order to get information and to conduct transaction with the government website. As per the perception of offline users, citizens' high trust on the government leads to high adoption of e-Government services. The independent samples t-test is performed to compare the means of both online and offline sample groups. The results show that there is a significant difference between the means of both sample groups. The mean values of online users are significantly higher as compared to offline users which show their positive perception towards the adoption of e-Government services. However, the perception of offline users is observed to be rather negative which means that their behavior is found to be reluctant towards the usage of e-Government services.

According to the Pakistani context, offline users are reluctant to adopt e-Government services because of being less educated, having less internet usage experience, and less frequent access to the internet. In contrast, online users are educated ones, have great internet usage experience, and have frequent access to the internet. As a result, online users can be considered as early adopters of e-Government services while offline users need awareness, resources and training to utilise e-Government services provided by the government of Pakistan. The details about hypotheses are given below:

- ***Hypothesis 1*** – Examines the relationship between perceived usefulness and citizens' intention to adopt e-Government services which was found to be significant in order to get information from the government website by online users. The finding is consistent with the results of the research studies conducted by (Venkatesh & Davis, 2000; Chang et al. 2006, Phang et al. 2005; Kumar et al. 2007; Bwalya, 2009; Elena, 2009; Shareef et al. 2011, Alomari et al. 2012; Liu et al. 2014). Higher level of perceived usefulness is directly associated with the increased citizens' intention to adopt e-Government services. The finding indicates that citizens will be more willing to adopt e-Government services if the services provide increased efficiency and effectiveness while interacting with the government website. Therefore, the government of Pakistan should ensure that website is able to deliver services to the citizens efficiently and effectively.

- ***Hypothesis 2*** – Examines the relationship between perceived ease of use and citizens intention to adopt e-Government services in order to get information (INF) and to conduct transaction (TRN) with the government website which was found to be significant for offline users. The finding indicates that the results are consistent with the research studies conducted by various researchers (Venkatesh & Davis, 2000; Kumar et al. 2007, Elena, 2009; Alomari et al. 2012; Liu et al. 2014). According to the perception

of offline sample group, if the government website is easy to use and understandable, then the citizens will be more willing to adopt e-Government services. In order to meet citizens' needs, especially those who are less frequent internet users, the Government of Pakistan should concentrate over the government website to make it easy to use, understandable and also easy to navigate to reach their ultimate target. In this research, the finding was also found to be significant for online users in order to conduct transaction (TRN).

- ***Hypothesis 4*** – The variable of ICT infrastructure was found to be significant for offline user group. The reason for its significance is due to the inadequate facilities to use e-Government services, non-availability of ICT resources, lack of knowledge about available e-Government services, lack of trainings provided by the Government of Pakistan and lack of awareness among the citizens. In order to promote the usage of e-Government services, Government of Pakistan should promote awareness campaigns; provide ICT resources and trainings to the citizens in order to meet their required objective. As most of the citizens do not have access to ICT resources, the Government of Pakistan should think to develop ICT hubs and kiosks in order to increase the usage of e-Government Services.

- ***Hypothesis 5*** – Awareness was found to be significant for online users. Therefore, the mean intention of the citizens to adopt e-Government services by the online group is higher as compared to offline group. Higher awareness about available e-Government services will lead to high intention of the citizens to adopt e-Government services. The finding was found to be in line with the results of the research study conducted by (Mofleh & Wanous, 2008). The Government of Pakistan should initiate awareness campaigns among the citizens in order to boost the usage of e-Government services.

- ***Hypothesis 6*** – Analysed the relationship between service quality and citizens intention to adopt e-Government services. The variable of service quality was found to be significant for online users. The reason for its significance is due to the awareness of online group about service quality parameters to be provided on the government website. The said group perceives that services provided to the citizens should be reliable, available 24 hours a day and also able to respond to the citizens needs quickly. Therefore, the Pakistani government should concentrate over the efficient delivery of services to the citizens in terms of reliable information provided on the government website, availability of information on the government website 24 hours a day and also efficient delivery of contents to the citizens within very short time. The findings were consistent with the research work conducted by (Kumar et al. 2007; Bwalya, 2009; Alawneh et al. 2013). In this research, the variable of service quality was also found to be significant in order to conduct transaction with the government website by online users.

- ***Hypothesis 7*** – This hypothesis was supposed to analyse the relationship between information quality and citizens intention to adopt e-Government services. The hypothesis was found to be significant in order to conduct transaction with the government website by online users. The reason for its significance is due to the non-availability of precise and up to date information available on the government websites.

In addition to this, most of the government websites have broken links due to which contents available on government websites are not accessible leading to lack of citizens' trust on available e-Government services. By keeping in consideration the highlighted facts, citizens feel reluctant to rely on information provided by the government website. Therefore, the Government of Pakistan should assure that the links provided on the government website are working properly. In order to increase citizens' trust on available e-Government services, the Government should also ensure that information provided on the government website is precise, update and easily accessible.

- ***Hypothesis 8*** – Analysed the relationship between perceived risk and citizens' intention to adopt e-Government services. The relationship was turned out to be significant for offline users. The less frequent internet users are mainly less educated people. Therefore, according to their perception, they are more vulnerable to risks while performing any transaction with the government website. On the contrary, frequent internet users do not feel themselves to be vulnerable for risks as they do have experience of using internet as well as their internet usage frequency is also high. The finding was found to be consistent with the existing research studies conducted by (Kumar et al. 2007; Shareef et al. 2011). In order to address the risk concerns, the Government of Pakistan should provide reliable services to the citizens which will ultimately reduce the fear and encourage the usage of e-Government services.

- ***Hypothesis 9*** – Analysed the relationship between information security and citizens' intention to adopt e-Government services in order to get information (INF) from the government website; which was found to be significant by online and offline users. This variable was proposed by the researcher. The results of the hypothesis proved that citizens' are more concerned about the security of information provided to the government website. Therefore, the Government of Pakistan should provide information security over the website. In order to deploy information security, the government should not allow another party to access personal information without consent. In addition, the personal information should not be used in an unintended way by the government organisation. In addition, the variable was also found to be significant in order to conduct transaction with the government website by offline users.

- ***Hypothesis 10*** – Analysed the relationship between transaction security and citizens' intention to adopt e-Government services to conduct transaction with the government website by online and offline users. The variable of transaction security was introduced by the researcher. The result shows that Pakistani citizens are more concerned about security of their personal and financial information while transacting with the government website. The reason of citizens' apprehension about security measures is the lack of availability of cyber rules and laws in Pakistan. The government should develop and propagate standardised cyber rules and laws among the citizens so that they may feel comfortable while transacting with the government website. In this research, the variable was also found to be significant in order to get information from the government website by online users.

- ***Hypothesis 11*** – Examined the relationship between trust in the internet and citizens intention to adopt e-Government services. The relationship was turned out to be significant for online users to get information and to conduct transaction with the government website. According to the Pakistani context, trust on the enabling technologies is one of the important variables influencing the citizens' intention to adopt e-Government services. Online users due to their vast experience of enabling technologies i.e., internet think that trust in the internet is a major aspect in order to communicate with the government websites. On the contrary, offline users feel fear to conduct transaction with the government websites. Therefore, their trust on enabling technologies is less. The finding was found to be consistent with the existing research studies conducted by (Mofleh & Wanous, 2008; Alomari et al. 2012). The result of this hypothesis also proves that people do not rely on enabling technologies to interact with the government which can be ultimate barrier in the adoption of e-Government services by the Pakistani citizens. Therefore, the Government of Pakistan should initiate small projects leading to large projects in order to enhance citizens' trust on internet.

- ***Hypothesis 12*** – Examined the relationship between trust in the government and citizens' intention to adopt e-Government services which was found to be significant in order to get information (INF) and to conduct transaction (TRN) with the government website by offline users. The finding was consistent with the existing research studies conducted by (Mofleh & Wanous, 2008; Shareef et al. 2011; Alomari et al. 2012). Due to the political instability since independence, citizens are facing a lot of problems. Government is unable to fulfill the citizens' needs. Therefore, citizens do not trust on the ever changing government. In order to increase citizens' trust, the Government of Pakistan should initiate trustworthy projects in order to increase citizens' trust on government.

7. FINDINGS AND RECOMMENDATIONS

The findings and recommendations of the research are beneficial for policy makers, practitioners, researchers and academicians. The key findings and recommendations are as follows:

- The citizens' requirements at different levels of service maturity; i.e., information and transaction levels are different from one another. Therefore, the government should understand the needs of citizens' according to their usage level of e-Government services, and should focus on fulfilling citizens' needs accordingly. Firstly, the Government of Pakistan needs to classify citizens on the basis of their service usage levels; i.e., information and transaction level and then need to plan accordingly. At the information level, citizens are at the initial stage of using e-Government services. Therefore, the citizens should be made aware of the benefits of using e-Government services. At the transaction level, citizens are mostly aware about available e-Government services. Therefore, the government should make their best efforts to enhance citizens' trust on e-Government systems. In this way, citizens' usage of e-government services would be enhanced.

- Before implementing e-Government, citizens should be made aware and familiarised with the available e-Government services. The government of Pakistan should focus on

how they can make citizens aware about their online presence. The aspect of awareness is of significant importance in order to boost the adoption of e-Government services. Therefore, the government of Pakistan should concentrate over the citizens having less or almost no internet usage experience, in order to boost the adoption of e-Government services. Hence, it is observed from the sample group of online users that citizens with more internet usage experience leads to higher adoption of e-Government services.

- The availability of ICT infrastructure is one of the major concerns to consider for the citizens who do not have enough resources to use available e-Government services. The government of Pakistan should provide ICT hubs / internet cafes for the citizens to have easy access to the available e-Government services. Pakistan, being a developing country lacks in the provision of ICT hubs / internet cafes to the citizens which is one of the hindering point for the adoption of e-Government services. The provision of ICT hubs / internet cafes, in the country would boost the usage and awareness of e-Government services among the citizens.

- Another finding is related to relative benefits achieved by the use of e-Government services. The variables of perceived usefulness (PU) and perceived ease of use (PEOU) are significant contributors influencing the citizens' intention to adopt e-Government services. According to the ITU (2012), only 11% of Pakistani citizens are internet users. Most of the citizens are unable to access e-Government services due to non-availability of computer and internet at their homes. Therefore, the government of Pakistan should think of providing inducement to the citizens for using e-Government services instead of using traditional ways of interaction with the government. There is also a need to make citizens aware about the usefulness and ease associated with the usage of e-Government services.

- Other findings of the research study are concerned with the interaction stage of e-Government which raises concern of trustworthiness on the service providers. The government of Pakistan should look into the security measures that lead to the increased usage of e-Government services for transaction purposes. Increased usage of e-Government services can bring much more benefits such as, operational excellence, cost and time savings, increased efficiency and effectiveness, and finally high quality public services delivery to the citizens. Pakistanis, being the citizens of a developing country facing a lot of challenges like non-availability of internet and computer at their homes, low awareness about available e-Government services and low internet usage which leads to the low usage of available e-Government services. Besides this, there are trust related factors; i.e., trust on the internet and trust on the government. The results of the study prove that trust is a significant contributor influencing citizens' intention to adopt e-Government services.

- Citizens feel reluctant to transact with the available e-Government services due to security loop holes in the government systems. The government of Pakistan should implement cyber laws to make citizens feel secured and comfortable while they are transacting with e-Government services so that their adoption for such services is ultimately increased. Within the context of Pakistan, it is observed that citizens have

perception that hackers may be able to intrude governmental services and can also steal their personal and financial information while transacting with the government website. The government should develop strategies to enhance citizens' trust on government systems.

- According to the citizens' perception, the information available on the government website is not updated and links available on the government websites are broken. Therefore, citizens do not trust on the information available on the government website which ultimately leads to low usage of available e-Government services. The government of Pakistan should assure citizens about the availability and reliability of information provided on the government website to ensure their trust on the government websites leading to high adoption of e-Government services.

7.1 Research Synthesis

According to the integrated conceptual model, the factors of website design, e-Readiness, security, trust and quality of service influence the citizens' intention to adopt e-Government services at different levels of service maturity; i.e., information and transaction level. In addition, data were collected from two different sample groups; i.e., online and offline. The results are presented at two different levels of service maturity; i.e., information and transaction level. Mostly, the existing literature is not categorised on the basis of service maturity levels; i.e., information and transaction level. Moreover, none of the study in the literature considers including online and offline sample groups for detailed analysis. This research study has included both online and offline sample groups to have good mix of citizens' perception and to avoid respondents' biasness. Therefore, data is collected from various sub-groups.

While considering the case of online users, the factor of website design covering the aspects of perceived usefulness and perceived ease of use are found to be noteworthy at information and transaction level respectively. Online users understand the relative benefits associated with the use of e-Government services. Online users are mostly educated users; therefore, they understand the ease associated with the usage of e-Government services to perform any transaction with the government website. In addition, the factor of e-Readiness including the variable of awareness is found to be trivial at information level. According to the perception of online users, high awareness about available e-Government services leads to the high intention of the citizens to adopt e-Government services. The factor of quality of service covering the aspect of service quality is found to be noteworthy at information and transaction level. The online group perceives that services provided to the citizens should be reliable, available 24 hours a day and also, able to respond to the citizens needs quickly. In addition, the factor of security including the variables of information security is found to be trivial at information level. In addition, the variable of transaction security is found to be significant at information and transaction level. The citizens perceive that their personal information may be used in an unintended way by the government agency. The factor of trust covering the aspect of trust in the internet is found to be noteworthy at information and transaction level. According to the Pakistani context, trust on the enabling technologies is also one of the most important variables influencing the citizens' intention to adopt e-Government services. The citizens perceive that internet is a robust and safe environment to transact with e-Government services.

While considering the case of offline users, the factor of website design covering the aspects of perceived ease of use is found to be notable at information and transaction level. The offline users think that their interaction with the government should be easier as compared to traditional way of dealing with the government. The factor of security covering the aspects of perceived risk and are found to be noteworthy at information and transaction levels. The variable of transaction security is found to be important in order to conduct transaction with the government website. The users' concerns are highly engaged in conducting secure transaction with the government website. In Pakistan, citizens are concerned with the security of their personal and financial information. Citizens perceive that hackers may be able to intrude their financial information; i.e., credit card details. Additionally, they have potential risk of being exposed to another party who may access their personal and financial information without their consent. Offline users are highly uncertain about risks associated with performing any transaction with the government website. The factor of trust covering the aspect of trust in the government is found to be noteworthy at information and transaction level.

The variables of awareness, trust in the internet and trust in the government were incorporated into the proposed conceptual model after conducting experts' reviews to make study specific to the Pakistani context. The results confirm the relationship of awareness and intention to adopt e-Government services in order to get information from the government website. In the context of Pakistan, awareness was found to be one of the potential contributors for the adoption of e-Government services. In addition, low internet usage in the country which is 10.9% of the whole population leads to the low usage of e-Government services (Internet World Stats, 2011). The government should initiate awareness campaigns among the citizen to boost the adoption of e-Government services. However, the relationship of trust variables and intention of the citizens was also found to be significant. The government should put their maximum efforts to increase the confidence of citizens over the e-Government systems.

On the basis of critical factors identified, the research has come up with an integrated conceptual model to overcome the shortcomings of existing models (Kumar et al. 2007; Alawadhi and Morris, 2008; Mofleh and Wanous, 2008; Bwalya, 2009; Lean et al. 2009; Elena, 2009; Liu et al. 2014) by integrating the adoption factors based on existing literature, and also incorporating country specific variables to make the model comprehensive. The model presents the factors and their respective variables found in the literature with an extension of quality of service, trust, e-Readiness and security factors containing the variables of service and information quality, trust in the internet and trust in the government, awareness, information security and transaction security respectively. In addition, the proposed integrated conceptual model may also serve as a starting point for decision makers to develop a better understanding of critical factors influencing the e-Government adoption in Pakistan.

8. CONCLUSION AND FUTURE WORK

8.1 Implications to Theory

To accomplish the research objectives, an integrated conceptual model is proposed based on strong theoretical background and expert reviews. The integrated conceptual model is underpinned by TAM, DOI, and DeLone and McLean IS Success models (Davis, 1989; Rogers, 2003; DeLone & McLean, 2003). Furthermore, expert reviews were conducted with the

government officials, software engineers and academic researchers of Pakistan. The objective of expert reviews was to confirm the factors and their respective variables of integrated conceptual model. As an outcome of expert reviews, three variables were incorporated into the revised conceptual model. Additional variables were trust in the Internet, trust in the government and awareness about available e-Government services. The study establishes a starting point for understanding critical factors for the implementation of e-Government in Pakistan. The study contributes by proposing an integrated conceptual model for e-Government adoption in the context of Pakistani society; furthermore, it concludes the analysis by providing recommendations to the policy makers.

8.2 Implications to Practice

The research work validated the proposed model at two different levels of service maturity; i.e., information and transaction levels. Citizens' perception plays a vital role in identifying critical factors influencing the adoption of e-Government services. Moreover, quota sampling method was employed to collect data from various groups which have been defined and named as IT professionals / Non IT professionals, government officials, software engineers and academic researchers of Pakistan. The data were collected in equal proportion from each defined groups. Later, data were analysed using SEM. After performing data analysis, the results generated were presented in the form of comparison between two samples groups; i.e., online and offline user groups. In addition, t-test was performed in order to compare the adoption perspectives of online and offline users. Furthermore, it is also concluded that online users can be considered as early adopters of e-Government services while offline users need awareness, resources and training to utilise e-Government services provided by the government of Pakistan (Lu et al. 2011). The study provides an instrument necessary for evaluating e-Government initiatives and fostering adoption of e-Government services.

8.3 Limitations of Research

In addition, the current research study focuses over the behavioral aspects of citizens. Firstly, generic ICM was proposed. Later, the ICM was customised according to the context of Pakistani society. The expert reviews confirmed and identified the potential factors influencing the adoption of e-Government services. Other factors like trust, security, e-Readiness, website design and quality of service were found to be prominent over the cultural aspects. However, the cultural aspects were not considered as influential towards the adoption of e-Government services. In the future studies, research may be conducted to find out the influence of cultural aspects towards the adoption of e-Government services in the context of Pakistan.

8.4 Future Work

Currently, the study was conducted as a cross-sectional. However, the study can address the need to observe the effects of phenomenon over time by conducting longitudinal studies. The behaviors of citizens may be observed at different intervals of time. In this research study, the effects of the phenomenon may be observed by analyzing the behavior of offline users who are less frequent internet users. By providing resources to such less frequent internet users, their behavior may be analyzed whether their perception is changed to positive or not. Moreover, studies of e-Government adoption in Pakistan are very less in number. Limited number of studies

on e-Government adoption stresses the need for future research in this area. Assessment about e-Government implementation in the country varies from time to time as it is a long term project. As a result, there is a need for further studies to assess the level of success for e-Government implementation in Pakistan at various time intervals.

REFERENCES

Aggelidis, V. P., & Chatzoglou, P. D. (2009). Using a modified technology acceptance model in hospitals. *International Journal of Medical Informatics*, *78*(2), 115–126.

Akman, I., Yazici, A., Mishra, A., & Arifoglu, A. (2005). E-Government: a global view and an empirical evaluation of some attributes of citizens. *Government Information Quarterly*, *22*(2), 239–257.

Alawneh, A., Al-Refai, H., & Batiha, K. (2013). Measuring user satisfaction from e-Government services: Lessons from Jordan. *Government Information Quarterly, 30*, 277 – 288.

Al-Busaidy, M., & Weerakkody, V. (2009). E-Government diffusion in oman: a public sector employees' perspective. *Transforming government: people, process and policy*, *3*(4), 375–393.

Al-Sobhi, F., Weerakkody, V., & Kamal, M. M. (2009). An exploratory study on the role of intermediaries in delivering public services in Madinah city: case of saudia arabia. *Transforming government: people, process and policy*, *4*(1), 14–36.

Alawadhi, S., & Morris, A. (2008). The use of the UTAUT Model in the Adoption of E-government Services in Kuwait. *In Proceedings of the 41st Hawaii International Conference on System Sciences*, 1–11.

Alomari, M., Woods, P., & Sandhu, K. (2012). Predictors for e-government adoption in jordan: Deployment of an empirical evaluation based on a citizen centric approach. *Information Technology & People*, *25*(2), 207–234.

Andersen, K. V., & Henriksen, H. Z. (2006). E-government maturity models: Extension of the Layne and Lee model. *Government Information Quarterly*, *23*(2), 236–248.

Belanger, F., & Carter, L. (2008). Trust and risk in e-government adoption. *The Journal of Strategic Information Systems*, *17*(2), 165–176.

Bui, T. X., Sankaran, S., & Sebastian, I. M. (2003). A framework for measuring national e-Readiness. *International Journal Electronic Business*, *1*(1), 3–22.

Bwalya, K. J. (2009). Factors affecting adoption of E-government in Zambia. *The Electronic Journal on Information Systems in Developing Countries*, *38*(4), 1–13.

Carter, L., & Belanger, F. (2004). Citizen adoption of electronic government initiatives. *In Proceedings of 37th Hawaii International Conference on System Sciences*, Hawaii.

Carter, L., & Belanger, F. (2005). The utilization of E-Government services: citizen trust, innovation and acceptance factors. *Information Systems Journal*, *15*(1), 5–25.

Chang, C. M., Hung, S. Y., & Yu, T. J. (2006). Determinants of user acceptance of the E-Government services: the case of online tax filing and payment system. *Government Information Quarterly*, *23*(1), 97–122.

Choudrie, J., & Dwivedi, Y. (2005). A survey of citizens' awareness and adoption of E-Government initiatives, the Government Gateway: a unified perspective. *In Proceedings of the E-Government workshop '05 (eGOV05)*.

Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319–339.

Delone, W. H., & McLean, E. R. (2003). The Delone and McLean Model of Information Systems Success: A ten-year update. *Journal of Management Information Systems*, *19*(4), 9–30.

Dimitrova, D. V., & Chen, Y. C. (2006). Profiling the adopters of E-government information and services: the influence of psychological characteristics, civic mindedness, and information channels. *Social Science Computer Review*, *24*(2), 172–188.

Doll, W. J., & Torkzadeh, G. (1988). The measurement of end-user computing satisfaction. *MIS Quarterly, 12,* 259 – 274.

Electronic Government Directorate. (2005). E-Government Strategy and 5-Year Plan for the Federal Government. Retrieved on 14th August, 2010 from http://pportal.punjab.gov.pk/portal/docimages/14240Action_Plan.pdf

Elena, S. (2009). Increasing E-Trust: A solution to minimize risk in E-Government Adoption. *Journal of Applied Quantitative Methods*, *4*(1), 31–44.

Evans, D., & Yen, D. C. (2005). E-government: an analysis for implementation: frameowrk for understanding cultural and social impact. *Government Information Quarterly*, *22*(3), 354–373.

Fang, Z. (2002). E-Government in Digital Era: Concept, Practice and Development. *International Journal of the Computer, the Internet and Information*, *10*, 1–22.

Gefen, D., Pavlou, P. A., Rise, G. M., & Wakertin, M. (2002). E-Government adoption. *In Proceedings of the eighth American conference on information systems*, Boston, MA.

Hahn, K. H., & Kim, J. (2009). The effect of online brand trust and perceived internet confidence on online shopping intention in the integrated multi-channel context. *International Journal of Retail and Distribution Management*, *37*(2), 126–141.

Heeks, R. B., & Bailur, S. (2007). Analyzing e-Government research: Perspectives, philosophies, theories, methods and practice. *Government Information Quarterly*, *24*(2), 243–265.

Hinton, P. R., Brownlow, C., McMurry, I., & Cozens, B. (1980). *SPSS Explained*. England: Routledge Inc.: East Sussex.

Ibrahim, Z., & Irani, Z. (2005). E-Government adoption: architecture and barriers. *Business Process Management Journal*, *11*(5), 589–611.

Irani, Z., Dwivedi, Y., & Williams, M. (2010). Understanding Consumer Adoption of Broadband: An Extension of the Technology Acceptance Model. *Journal of Operational Research Society*, *64*(8), 683–696.

International Telecommunication Union "Measuring the information society", 2011 Retrieved on 09th June, 2012 from http://www.itu.int/ITU-D/ict/facts/2011/index.html

Jaeger, P. T. (2003). The endless wire: E-Government as global phenomenon. *Government Information Quarterly*, *20*(4), 323–331.

Kaisara, G., & Pather, S. (2009). E-government in South Africa: e-service Quality access and Adoption Factors. *In proceedings of the 11th Annual Conference On World Wide Web Applications*, 2-17.

Kamal, M. M., Hackney, R. and Sarwar, K. (2013). Investigating the Factors Inhibiting e-Government Adoption in Pakistan. *Journal of Global Information Management*, *21*(4), 77-102.

Kamal, M. M., & Alsudairi, M. (2009). Investigating the importance of factors influencing integration technologies adoption in local government authorities. *Transforming Government: People, Process and Policy*, *3*(3), 302–331.

Kim, D. J., Ferrin, D. L., & Rao, H. R. (2008). A trust-based consumer decision making model in electronic commerce. The role of trust, perceived risk and their antecedents. *Decision Support Systems*, *44*(2), 544–564.

Klievink, B., & Janssen, M. (2009). Relizing joined-up government dynamic capabilities and stage models for transformation. *Government Information Quarterly*, *26*(2), 275–284.

Kline, P. (1999). *The handbook of psychological testing*. London: Routledge.

Kumar, V., Mukerji, B., Irfan, B., & Ajax, P. (2007). Factors for successful E-government adoption: A Conceptual Framework. *The Electronic Journal of E-government*, *5*(1), 63–77.

Layne, K., & Lee, J. (2001). Developing fully functional E-government: A four stage model. *Government Information Quarterly*, *18*, 122–-136.

Lean, O. K., Zailani, S., & Fernando, Y. (2009). Factors influencing intention to use E-Government services among citizens in Malaysia. *International Journal of Information Management*, *29*(6), 458–475.

Lee, J., Kim, H. J., & Ahn, M. J. (2011). The willingness of e-Government service adoption by business users: The role of offline service quality and trust in technology. *Government Information Quarterly*, *28*, 222–230.

Lee, M. (2009). Factors influencing the adoption of internet banking: An integration of TAM and TBP with perceived risk and perceived benefit. *Electronic Commerce Research and Applications*, *8*(3), 130–141.

Lin, F., Fofanah, S. S., & Liang, D. (2011). Assessing citizen adoption of e-Government initiatives in Gambia: A validation of the technology acceptance model in information systems success. *Government Information Quarterly*, *28*, 271–279.

Liu, Y, Li, H., Kostakos, V., Goncalves, J., Hosio, S., & Hu, F. (2014). An empirical investigation of mobile government adoption in rural China: A case study in Ziejiang Province. *Government Informtion Quarterly, 31,* 432 – 442.

Lu, Y., Cao, Y., Wang, B., & Yang, S. (2011). A study on factors that affect users' behavioral intention to transfer usage from the offline to the online channel. *Computers in Human Behavior*, *27*, 355–364.

McKnight, D. H., Kacmar, C. J., & Choudhry, V. (2004). Dispositional trust and distrust distinctions in predicting high and low risk internet expert advice site perceptions. *e-Service Journal, 3,* 35 – 55.

Mesch, G., & Talmud, I. (2006). The quality of offline and online relationships: the role of multiplexity and duration of social relationships. *The information Society*, *22*, 137–148.

Miyazaki, A. D., & Fernandez, A. (2001). Consumer perceptions of Privacy and Security Risks for online Shopping. *Journal of Consumer Affairs*, *35*(1), 27–44.

Mofleh, S. I., & Wanous, M. (2008). Understanding Factors Influencing Citizens Adoption of e-government Services in the Developing World: Jordan as a Case Study. *Journal of Computer Science*, *7*(2), 1–11.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: a multiple item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, *64*(1), 12–40.

Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, *7*(3), 101–134.

Phang, C. W., Sutanto, L. J., Li, Y., & Kankanhalli, A. (2005). Senior citizens adoption of E-Government: in quest of the antecedents of perceived usefulness. *In Proceedings of the 38th Hawaii International Conference on System Sciences*.

Prenksy, M. (2001). Digital Natives, Digital Immigrants. *MCB University Press*, 9 (5), 1 – 6.

Reddick, C. G. (2004). A two stage model of e-government growth: theories and empirical evidence for US cities. *Government Information Quarterly*, *21*(1), 51–64.

Rehman, M., & Esichaikul, V. (2011). Factors influencing the adoption of e-government in Pakistan. *In Proceedings of the International Conference on E-business and E-government*, 7958–7961.

Rehman, M., Esichaikul, V., & Kamal, M. M. (2012) "Factors influencing e-government adoption in Pakistan", *Transforming Government: People, Process and Policy*, 6(3), 258–282.

Reichheld, F. F., & Schefter, P. (2000). E-Loyalty. *Harvard Business Review*, 105–113.

Rogers, E. M. (2003). *Diffusion of innovation*. NY: The Free Press.

Segovia, R. H., & Jennex, M. E. (2009). Paralingual Web Design and Trust in E-Government. *International Journal of Electronic Government Research*, *5*(1), 36–49.

Shareef, M. A., Kumar, V., Kumar, U., & Hasin, A. A. (2009). Diffusion of Innovation and Capability Theory in the Context of E-Government. In Y.Dwivedi et al., (Ed.), *Handbook of Research on Contemporary Theoretical Models in Information Systems* (pp. 192-211), USA: IGI Global Publications.

Shareef, M. A., Kumar, V., Kumar, U., & Dwivedi, Y. K. (2011) "E-Government Adoption Model (GAM): Differing service maturity levels. *Government Information Quarterly*, 28, 17–35.

Srivastava, S. C., & Teo, T. S. H. (2008). Citizen trust development for E-government adoption and usage: Insights from young adults in Singapore. *Communications of the Association for Information Systems*, *25*(31), 359–378.

Tapscott, D., & Agnew, D. (1999). Governance in the digital economy. *Issues for the new millenium: Finance and Development*, 34 – 37.

Tassabehji, R., & Elliman, T. (2006). Generating Citizen Trust in E-Government using a Trust Verification Agent: A research note. *European and Mediterranean Conference on Information Systems*.

United Nations (2010). UN E-Government Survey. Retrieved on 20th January 2010: Available Online at: http://www2.unpan.org/egovkb/profilecountry.aspx?ID=128

United Nations (2014). United Nations E-Government Survey. Retrieved on 16th March 2015, Available Online at: http://unpan3.un.org/egovkb/Portals/egovkb/Documents/un/2014-Survey/E-Gov_Complete_Survey-2014.pdf

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186–204.

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly*, *27*(3), 425–478.

Warkentin, M., Gefen, D., Pavlou, P., & Rose, G. (2002). Encouraging citizen adoption of E-Government by building Trust. *Electronic Markets*, *12*(3), 157–162.

Welch, E. W., & Panday, S. (2005). E-government and network technologies: Does bureaucratic red tape inhibit, promote or fall victim to intranet technology implementation? *In Proceedings of the 38th Hawaii international conference on systems sciences*.

Weerakkody, V., Haddadeh R. E., Al-Sobhi, F, Shareef, M. A, & Dwivedi, Y. (2013). Examining the influence of intermediaries in facilitating e-government adoption: An empirical investigation. *International Journal of Information Management, 33*, 716 – 725.

Wu, J., & Wang, S. (2005). What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. *Information and Management*, *42*(5), 719–729.

Appendix A: Survey Instrument Items

Variables	Instrument Items	Researchers
Website Design		
PU_1	"E-Government services can save my time, compared to traditional way of dealing with the government".	Elena (2009)
PU_2	"E-Government services can improve the service quality that I will receive, compared to traditional way of dealing with the government".	Venkatesh et al. (2003), Belanger & Carter (2008)
PU_3	"I think that E-Government websites will provide valuable services for me".	Davis (1989), Belanger & Carter (2008)
PU_4	"A state government website would enhance my effectiveness in searching for and using government services (e.g., license renewal)".	Venkatesh et al. (2003), Belanger & Carter (2008)
PEOU_1	"E-Government services make it easier to do my task (e.g., online tax payment, online ticket purchase)".	Venkatesh et al. (2003), Belanger & Carter (2008)
PEOU_2	"A state government website would enable me to complete transactions with the government quickly (e.g., online payment of utility bills)".	Venkatesh et al. (2003), Belanger & Carter (2008)
PEOU_3	"I believe that interacting with E-Government services would be clear and understandable process".	Davis (1989), Venkatesh et al. (2003)
PEOU_4	"It would be easy for me to become skillful at using state government services".	Davis (1989), Venkatesh et al. (2003)
PW_1	"Does the support of local language on the E-Government services of help to understand the contents of the service"?	Added in this study
E-Readiness		
IN_1	"Is government providing adequate facilities (e.g., ICT	Kaisara and Pather (2009)

	hubs, service centers or internet cafes) to access E-Government services"?	
IN_2	"I have the resources necessary to use E-Government services at home (e.g., availability of computer, availability of internet)".	Venkatesh et al. (2003), AlAwadhi and Morris (2008)
IN_3	"I have the resources necessary to use E-Government services at work (e.g., availability of computer, availability of internet)".	Venkatesh et al. (2003), AlAwadhi and Morris (2008)
AW_1	"I have the knowledge necessary to use E-Government services (e.g., skills for the usage of E-Government services)".	Venkatesh et al. (2003), AlAwadhi and Morris (2008)
AW_2	"The government is fulfilling its responsibility of creating awareness and educating people about the existence of E-Government services".	Kaisara and Pather (2009)
AW_3	"The government is giving training to the citizens to make best use of online services".	Kaisara and Pather (2009)
Security		
PR_1	"The decision of using E-Government services is risky".	Belanger and Carter (2008)
PR_2	"I feel that the risks outweigh the benefits of using an E-Government service".	Elena (2009)
PR_3	"In general, I believe that using E-Government services over the internet are risky".	Belanger and Carter (2008)
TS_1	"I feel it is unsafe to transact with an E-Government service".	Elena (2009)
TS_2	"Hackers may be able to intrude governmental services, and can also steal my personal information stored on the web".	Elena (2009)
IS_1	"My personal information may be used in an unintended way by the government agency".	Elena (2009)
IS_2	"The governmental services may allow another party access to my personal information without my consent".	Elena (2009)
IS_3	"Someone can snatch my personal information while I am sending the information to a governmental website".	Elena (2009)
Quality of Service		
SQ_1	"E-Government services enable me to access government information when I need; i.e., 24 * 7 hours / day".	Elena (2009)
SQ_2	"E-Government services are reliable to deal with than the traditional way of dealing with the government".	Added in this study
SQ_3	"E-Government services are able to respond to the citizens needs quickly".	Added In this study
IQ_1	"E-Government services provide the precise information you need".	Doll and Torkzadeh (1988)
IQ_2	"E-Government services provide up-to-date information".	Doll and Torkzadeh (1988)
IQ_3	"E-Government service's contents are easily accessible via E-Government website".	Doll and Torkzadeh (1988)
Trust		

TI_1	"The internet has enough safeguards to make me feel comfortable to interact with the E-Government services".	McKnight et al. (2004), Belanger and Carter (2008)
TI_2	"I feel assured that legal and technological structures adequately protect me from problems on the internet".	McKnight et al. (2004), Belanger and Carter (2008)
TI_3	"In general, internet is now a robust and safe environment to transact with the government agencies".	McKnight et al. (2004), Belanger and Carter (2008)
TG_1	"Government services can be trusted to carry out online transactions faithfully".	McKnight et al. (2004), Belanger and Carter (2008)
TG_2	"The government providing services through the internet are trustworthy".	McKnight et al. (2004), Belanger and Carter (2008)
TG_3	"The government providing e-services keeps citizens' best interests in mind".	McKnight et al. (2004), Belanger and Carter (2008)
Intention to Adopt		
INT_1	"I intend to use E-Government services to get information".	Belanger and Carter (2008)
INT_2	"I intend to use E-Government services to transact with the government".	Added in this study